

REMARKS

Reconsideration of this application, as amended, is requested.

Claims 1-4 remain in the application. Independent claims 1 and 3 have been amended to define the invention more clearly.

The previously presented claims were rejected under 35 USC 103(a) as being obvious over the assignee's earlier US Patent No. 6,550,596 to Shiozaki et al. The Examiner identified various elements of Shiozaki et al. that were considered to correspond to the invention defined by the previously presented claims. The Examiner then responded to the arguments that were presented in the amendment received in the United States Patent and Trademark Office on March 3, 2008. In this regard, the Examiner asserted that both the subject application and the Shiozaki et al. reference "teach a valve that is spring biased against a passage." The Examiner then asserted that an electromagnet is used to open and close this passage. The Examiner acknowledged that the present application uses the electromagnet to open the passage, while the Shiozaki et al. reference uses the electromagnet to close it. The Examiner concluded that it would be obvious to anyone skilled in the art that this is mere reversal.

As noted in the previous amendment, the Shiozaki et al. reference has a valve member with a magnetic piece 9.2 and a plate spring 9.1. The plate spring 9.1 is biased into a position for closing the oil supply adjusting hole 7. However, a permanent magnet 10 is disposed on the side of the case 2-1 opposite the oil supply adjusting hole 7. As a result, the permanent magnet 10 constantly exerts a magnetic force on the magnetic piece 9-1 of the valve member 9 to urge the valve member 9 away from the partition plate 4 and away from the oil supply adjusting hole 7 in the partition plate 4. Hence, the

permanent magnet 10 constantly exerts forces for keeping the oil supply adjusting hole 7 in the open state, thereby permitting more oil to flow into the torque transmission chamber for generating more torque on the driving disc and generating higher rotational speeds of the case 2. Higher rotational speeds are not always required. Hence, operational conditions exist where the oil supply adjusting hole 7 should be closed to stop a flow of oil into the torque transmission chamber and to permit the oil in the torque transmission chambers to flow gradually out due to the action of the dam 15. To achieve this closing of the oil supply adjusting hole 7, the electromagnet 11 is operated to generate a magnetic field in a direction opposite to that of the magnetic field generated by the permanent magnet 10. Thus, the magnetic field of the electromagnet 11 overcomes the magnetic forces of the permanent magnet 10 so that the biasing forces of the plate spring 9.1 urge the valve member 9 into a position for closing the oil supply adjusting hole 7.

A magnetic field generated by an electromagnet of Shiozaki et al. has three patterns as described below:

- (a) Cutting the magnetic field; OFF:
i.e., a magnetic field of a permanent magnet attracts a valve member made by a leaf spring which has a magnetic piece, whereby an oil supply adjustment hole is opened;
- (b) Reinforcing a magnetic field of a permanent magnet; ON -1:
i.e., the magnetic field of the permanent magnet is reinforced to attract the valve member made by the leaf spring, whereby the oil supply adjustment hole is opened,
- (c) Canceling the magnetic field of the permanent magnet; ON -2:
i.e., the magnetic field of the permanent magnet is cancelled to attract the valve member made by the leaf spring, whereby the oil supply adjustment hole is opened.

Comparing the above-described pattern (b); ON -1 with pattern (c); ON -2, it is necessary to apply a reverse electric current to an electromagnet, since the direction of

magnetic flux of the magnetic field is opposite. More particularly, for performing the above controls of the three patterns (a)-(c), it is necessary to pass an electric current with a current of regular voltage varyingly combined with a current of reverse voltage. Therefore, the control logic becomes complicated.

Generally, an electromagnet has much lower magnetic induction than a permanent magnet, and its magnetic force is weak. Accordingly, far greater magnetic force is needed in the above-described case of (c); ON -2, than in the case of (b); ON -1. Large and heavy electromagnetic coils (coils that are wound many times) are required, or great electricity is required to obtain the greater magnetic force needed for Shiozaki et al. Both of these options impair responsiveness.

Although only the voltages of 0V, +12V and -12V are described in each embodiment, necessary electricity is supplied in case of (c); ON -2, when the absolute value of the voltage at the time of excitation is same, which shows that surplus electricity is supplied in case of (b), ON -1 (e.g. waste of electricity, heat generation of components, etc.). In addition, hardware becomes complicated in the apparatus of Shiozaki et al. (e.g. a switch changing the regular voltage and reverse voltage is necessary for an electronic control unit).

The Examiner's arguments might be more compelling if the claims of the subject application were directed to an apparatus. Counsel does not dispute the existence of cases holding that the mere reversal of parts is not patentable without some unexpected or unobvious results. However, the applicant here is not claiming an apparatus. Rather, the claims of the subject application are directed to a method. The method claims, as currently amended, positively recite a method step of biasing the valve member against

the partition plate for keeping the oil circulating flow passage in a normally closed condition while keeping the valve member free of magnetic forces acting thereon. The method proceeds by subjecting the valve member to magnetic forces only in response to sensing conditions indicative of a need for a greater rotation speed of the sealing case.

In contrast, the permanent magnet 10 of Shiozaki et al. constantly subjects the valve 9 to magnetic forces for keeping the valve 9 in a normally open stage. The Shiozaki et al. reference then activates the electromagnet 11 to generate a magnetic field sufficient for overcoming magnetic field of the permanent magnet 10 so that the valve can be closed as needed.

It is submitted that the difference between the claimed method and the prior art requires more than just a rearrangement of parts, but rather requires an entirely different operational logic and entirely different method steps that are not suggested by the assignee's earlier Shiozaki et al. reference. Furthermore, the applicant has determined that the claimed invention leads to more efficient use of the electrical power consumption, and hence greater efficiencies for the engine. More particularly, a magnetic field generated by an electromagnet as recited in the amended claims has only two patterns as described below:

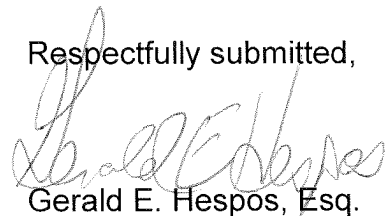
- (a) Cutting the magnetic field; OFF:
i.e., a valve member made by a leaf spring which has a magnetic piece, is not attracted, whereby an oil supply adjustment hole is closed;
- (b) Generating a magnetic field; ON:
i.e., a valve member made by a leaf spring which has a magnetic piece, is attracted, whereby an oil supply adjustment hole is opened.

The direction of magnetic flux of the magnetic field is constant in the claimed invention, and hence it is unnecessary to apply a reverse electric current to an electromagnet.

It is unnecessary to pass an electric current with a current of regular voltage varyingly combined with a current of reverse voltage to perform (a) and (b) of the claimed invention. Therefore, the control logic becomes simple. Hardware also simplified (e.g. a switch changing the regular voltage and reverse voltage is unnecessary for an electronic control unit). Nothing in Shiozaki et al. would lead the skilled artisan to the invention defined by currently amended claims.

In view of the preceding amendments and remarks, it is submitted that the invention is directed to patentable subject matter and allowance is solicited. The Examiner is urged to contact applicant's attorney at the number below to expedite the prosecution of this application.

Respectfully submitted,



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